

APPENDIX 7. LIGHTING REPORT

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PROJECT MEMORANDUM Number: 001A

Date: 02.03.2026

Job Number: 2512153

To: Bell Architects

Attention: Wade Kampes

Email: wadekampes@bellarc.com.au

From: Daniel Tieu

Project: St Vincent & Maryatr Street, Port Adelaide, SA

Subject: Outdoor Lighting Assessment

Dear Wade,

1.0 INTRODUCTION

TMK Consulting Engineers were engaged to provide an outdoor lighting assessment report to address the following:

An Obtrusive Light – Compliance Report prepared by a qualified and experienced Electrical Engineer in accordance with Australian Standard 4282 – 2023 ‘Control of the obtrusive effects of outdoor lighting’ shall be provided to Council for Approval.

External lighting requirements for the proposed development, including light spill across to adjacent properties must be compliant to the current Australian Standards.



Figure 1: Aerial view and Obtrusive Lighting Calculation Boundary of proposed development

The objective of this report is to:

- a) Provide certification/commentary on the light spill across the boundary lines to adjoining residential properties boundaries during both curfew & non-curfew hours when the site is in operation, compliant to AS4282-2023 Table 3.1 and Table 3.2 criteria (extract copied below) for Environmental Zone A4 – High District Brightness.

Table 3.1 — Environmental zones

Environmental zones	Ambient light conditions	Descriptions/ Examples
A0	Intrinsically dark	UNESCO Starlight Reserve. IDA: Dark Sky Parks, Reserves or Sanctuaries Major optical observatories Other accreditations for dark sky places for example astrotourism, heritage value, astronomical importance, wildlife/ecosystem protection Lighting for safe access may be required
A1	Dark	Relatively uninhabited rural areas (including terrestrial, marine, aquatic and coastal areas) Generally roadways without streetlighting through rural areas
A2	Low district brightness	Sparsely inhabited rural and semi-rural areas Generally roadways without streetlighting through suburban, rural or semi-rural areas other than intersections
A3	Medium district brightness	Suburban areas in towns and cities Generally roadways with streetlighting through suburban, rural or semi-rural areas
A4	High district brightness	Town and city centres and other commercial areas Residential areas abutting commercial areas Industrial and Port areas Transport Interchanges
TV	High district brightness	Vicinity of major sport and event stadiums during TV broadcasts

NOTE Zones A0 and A1 would normally have a minimum area of 50 ha.(0.5 km²). There may be smaller environmentally sensitive areas.

Figure 2 – Table 3.1 of AS4282

Table 3.2 — Light technical parameter limits

Zones	Maximum vertical illuminance (E_v) lux		Threshold increment (TI)		Upward Light Ratio
	Non-curfew	Curfew	Maximum TI %	Default Adaptation level (L_{ad}) cd/m ²	Maximum ULR _S or ULR _L
A0	0 ^a	0.0	N/A	N/A	0.00
A1	2	0.1	20	0.1	0.00
A2	5	1	20	0.2 ^b	0.01
A3	10	2	20	1	0.02
A4	25	5	20	5	0.03
TV	N/A	N/A	20	10	0.08

^a For A0, E_v shall be as close to zero as practicable without impacting safety considerations.
^b For an internally illuminated sign in a A2 zone, $L_{ad} \leq 0.25$ cd/m²

Figure 3 Table 3.2 AS4282

- b) Targeted illumination level on the car park areas and driveways, compliant to AS1158.3.1 -2020 for below usage areas indicated below and shown in Figure 4;
- Lighting calculations are according to AS1158.3.1, sub-category:
 - PC2 for carpark areas
 - PCD for disabled car park space
 - PCX for pedestrian crossing
 - PP3 for right of way pedestrian pathways
 - Average horizontal illuminance of 14 lux for general circulation space

Obtrusive lighting calculations are within the limit permitted within AS4282:2023

The various steps undertaken in the investigation were:

- Computer modeling using readily available software & luminaire photometric (.IES) files received from lighting supplier.
- Cross-reference & examination of all relevant standards to assess whether all the requirements are achieved.
- Desktop assessment of the condition of the site utilizing information from Google maps / near maps

The following was excluded from the assessment:

- Site survey visual walk through to examine the condition around the site.

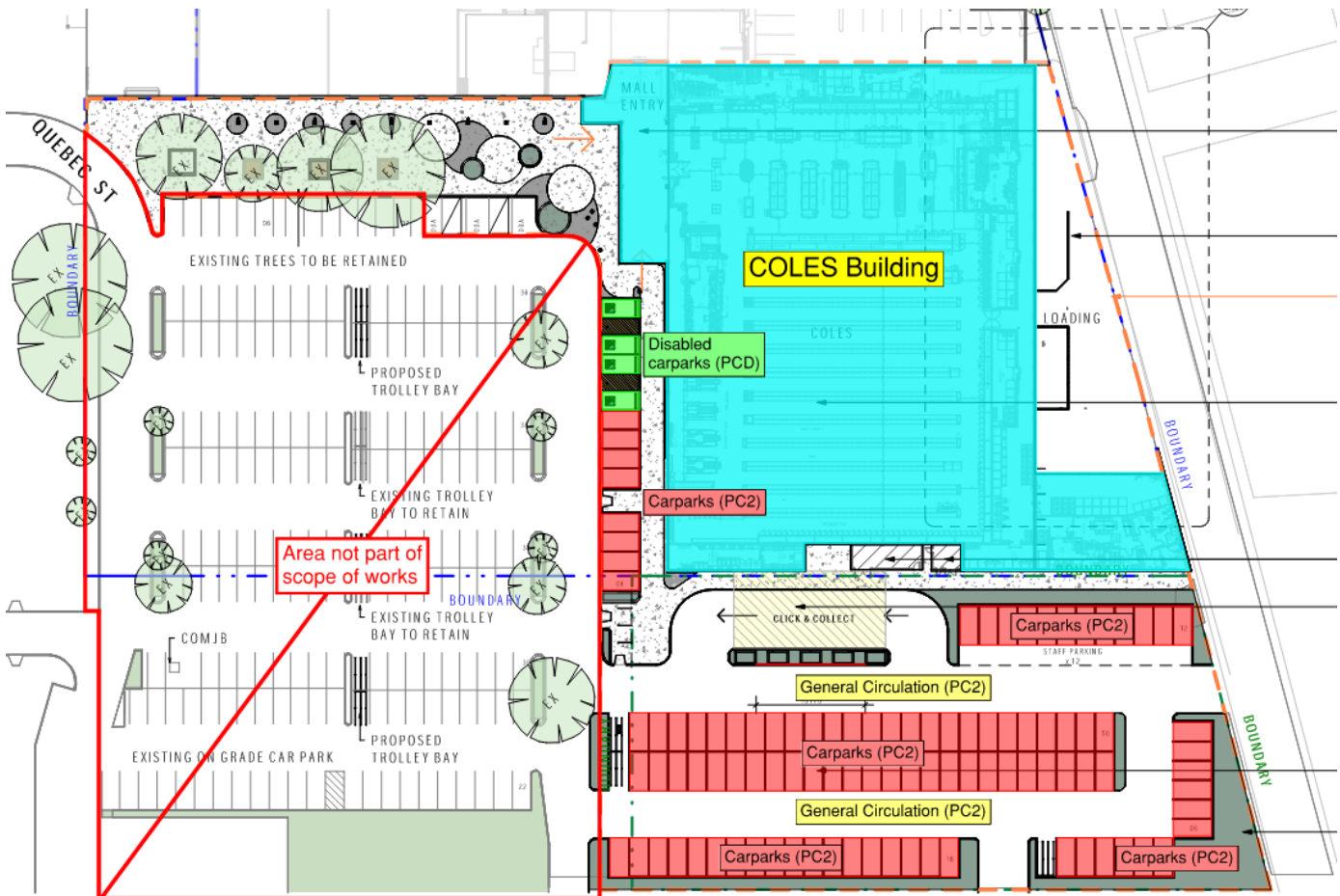


Figure 4: Proposed Site Plan (S1), Drawing S1-0004 Rev B, dated 12.01.2026

2.0 PROPOSED LIGHTING LAYOUT

The lighting layout proposed is based on the use of:

- 1x 90W LED luminaires, Surface mounted floodlight (HANECO, Lumino Pro – T4 Optic)
- 1x 60W LED luminaires, Surface mounted floodlight (HANECO, Lumino Pro – T3 Optic)
- 1x 90WLED luminaires, Pole mounted floodlight (HANECO, Lumino Pro – T3 Optic – 1m Outreach)
- 5x 90WLED luminaires, Pole mounted floodlight (HANECO, Lumino Pro – T4 Optic – 1m Outreach)
- 2x 60WLED luminaires, Pole mounted floodlight, Back-to-Back Arrangement (HANECO, Lumino Pro – T4 Optic – 1m Outreach)

Figure 5 provides an indication of the proposed lighting layout.

Figure 6 shows an example 3D perspective of the proposed building.

Figure 7 shows the lighting schedule & symbols, and installation arrangement:

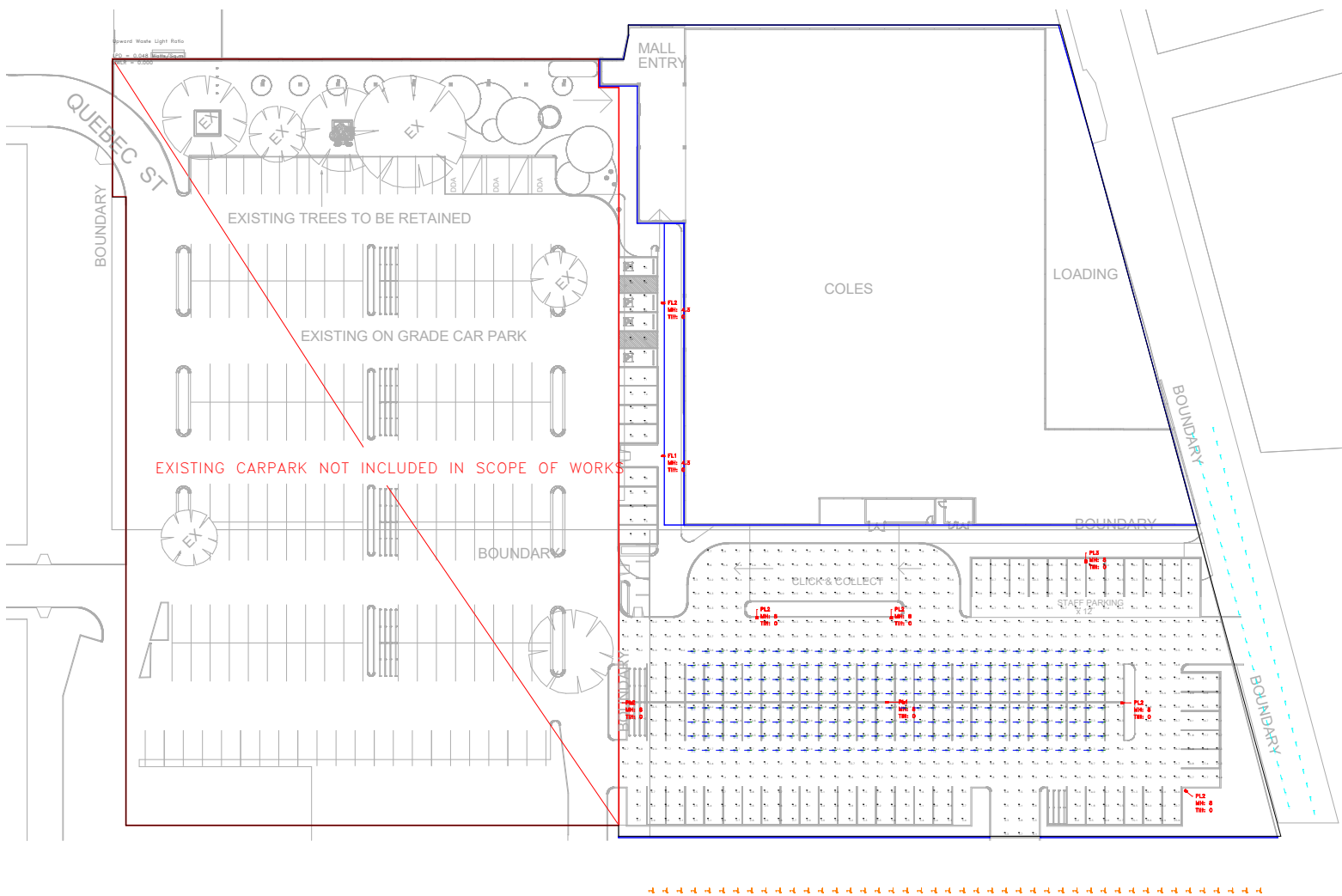


Figure 5 – Proposed Lighting Layout

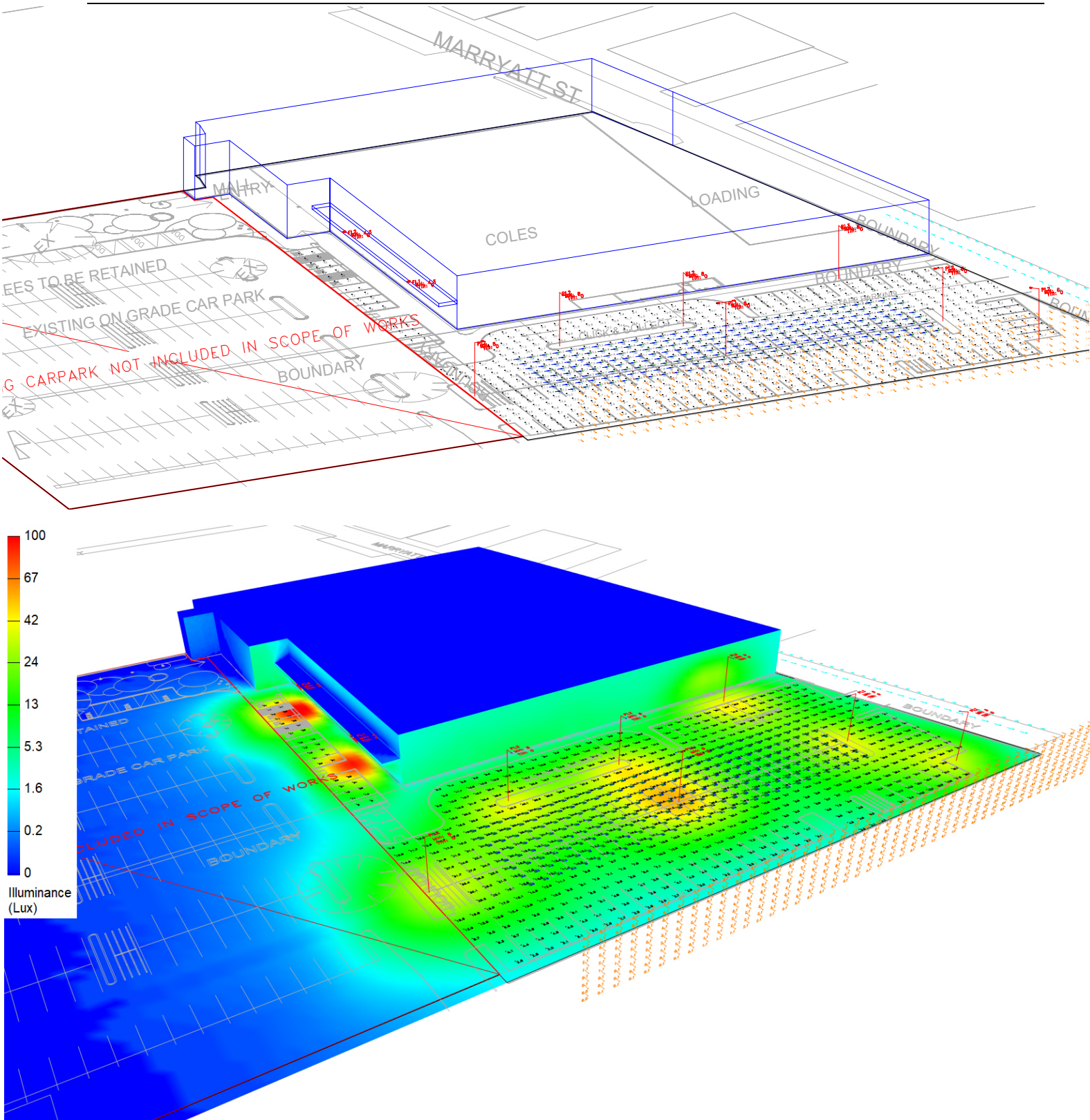


Figure 6 – Proposed 3D Perspective Model



Luminaire Schedule						
Symbol	Qty	Label	Description	LLF	Luminaire Lumens	Mounting Height
	1	FL2	90W LED Surface Mounted floodlight, 4000K (Haneco, Lumino Pro – T4 Optic)	0.800	12814	4.3
	1	FL1	60W LED Surface mounted floodlight, 4000K (Haneco, Lumino Pro – T3 Optic)	0.800	9303	4.3
	1	PL3	90W LED Pole mounted floodlight, 4000K (Haneco, Lumino Pro – T3 Optic, 1m outreach)	0.800	14007	8
	5	PL2	90W LED Pole mounted floodlight, 4000K (Haneco, Lumino Pro – T4 Optic, 1m outreach)	0.800	12814	8
	1	PL1	60W LED Pole mounted floodlight, 4000K (Haneco, Lumino Pro – T4 Optic, 1m outreach)	0.800	8451	8

Figure 7 – Luminaire Schedule

Luminaire Location Summary				
LumNo	Label	Orient	Tilt	Mounting Height
1	FL1	180	0	4.3
2	FL2	180	0	4.3
3	PL1	0	0	8
4	PL2	270	0	8
5	PL2	270	0	8
6	PL2	140	0	8
7	PL2	180	0	8
8	PL2	0	0	8
9	PL3	270	0	8

Figure 8 – Luminaire location summary

3.0 LIGHT SPILL ASSESSMENT

The criteria for vertical light spills outline in AS 4282-2023 - Control of the obtrusive effects of outdoor lighting, Table 3.2 are the following:

- Threshold Increment on Marryatt Street to be less than 20% based on adaptation luminance of 5 cd/m², with cut-off angle of 20° above horizontal.
- Non-Curfew hour (between 6am – 11pm) – maximum of 25 lux across adjacent residential allotments, A4 – High District Brightness under AS4282:2023 Tables 3.1 and 3.2, and.
- Curfew hour (between 11pm – 6am) – maximum of 5 lux across adjacent residential allotments, A4 – High District Brightness under AS4282:2023 Tables 3.1 and 3.2, and.

Assessment had been conducted based on 10-metre-high working planes on all boundaries, measuring from the highest point of impacted observation points on adjoining properties in the direct sight of line with height point of luminaries.

Boundary vertical spill had been measured at 1.5m off ground level, and at the face of the adjoining property or at 10m into the adjoining property, whichever is closer.

Potential light spill across neighbouring property from headlights of vehicles are not considered during the computer modelling, as this is not a requirement for assessment under AS4282.

Figure 9 shows the calculated Threshold Increment on Marryatt Street, and upwards light waste ratio for the proposed development. Figure 10 shows the calculated Curfew Hours light spill across the adjoining boundary.



Threshold Increment (TI)

Maximum Allowable Value: 20 %

Calculations Tested (2):

Calculation Label	Adaptation Test Luminance	Test Results
Marryatt St_TI_1	5	PASS
Marryatt St_TI_2	5	PASS

Upward Waste Light Ratio (UWLR)

Maximum Allowable Value: 3.0 %

Calculated UWLR: 0.0 %
Test Results: **PASS**

Figure 9 – Threshold Increment and Upward Waste Light Ratio for A4 zones

Obtrusive Light - Compliance Report

AS/NZS 4282:2019, A4 - High District Brightness, Curfew
Filename: 2512153 - Lighting Assessment - Rev A
10/02/2026 3:25:47 PM

Illuminance

Maximum Allowable Value: 5 Lux

Calculations Tested (1):

Calculation Label	Test Results	Max. Illum.
Adjacent Residential_Ill_Seg1	PASS	0.8

Luminous Intensity (Cd) At Vertical Planes

Maximum Allowable Value: 2500 Cd

Calculations Tested (1):

Calculation Label	Test Results
Adjacent Residential_Cd_Seg1	PASS

Figure 10 – Curfew Obtrusive Light Compliance Report for A4 zones

4.0 SITE LIGHTING ASSESSMENT

The criteria for site lighting are based on AS1158.3.1 - 2020, Table 3.7:

- PC2 for carpark areas
- PCD for disabled carparks
- Average horizontal illuminance of 7 lux for general circulation space

TABLE 3.7

VALUES OF LIGHT TECHNICAL PARAMETERS FOR OUTDOOR CAR PARKS (INCLUDING ROOF-TOP CAR PARKS)

1	2	3	4	5
Lighting subcategory	Light technical parameters (LTP)			
	Average horizontal illuminance ^{a,b} (E_h)	Point horizontal illuminance ^{a,b} (E_{ph})	Illuminance (horizontal) uniformity ^c Cat. P (U_{E2})	Point vertical illuminance ^{a,b} (E_{pv})
	lx	lx		lx
PC1	14	3	8	3
PC2	7	1.5	8	1
PC3	3.5	0.7	8	—
PCD ^d	—	≥ 14 and $\geq (\bar{E}_h)^d$	—	—
PCX ^e	21	5	8	—

Figure 11 Table 3.7 of AS1158.3.1

Calculation Summary						
Label	CalcType	Units	Avg	Max	Min	Max/Avg
Coles Carpark	Illuminance	Lux	19.1	57.6	2.6	3.02
Vertical Calc_1	Illuminance	Lux	12.5	32	1	2.55
Vertical Calc_2	Illuminance	Lux	10.6	33	1	3.12
W Disabled Carparks	Illuminance	Lux	45.4	82	20	1.81
Western Carpark	Illuminance	Lux	20.3	48	7	2.36

Figure 12 Calculation Summary

Results Achieved – Pass (as indicated in Figure 12 – Calculation Summary).

- For PC2 carpark:
 - The average horizontal illuminance level calculated is greater than the 7 lux, which is required under AS1158.3.1 Table 3.7 column 2. Therefore, satisfy the standard.
 - The minimum illuminance level calculated is greater than 1.5 lux, which is required under AS1158.3.1 Table 3.7 column 3. Therefore, satisfy the standard.
 - The illuminance uniformity UE2 (ratio of Max to Avg illuminance) calculated is less than 8 required under AS1158.3.1 Table 3.7 column 4, therefore satisfy the standard.
 - The minimum point vertical illuminance level calculated is greater than 1, which is required under AS1158.3.1 Table 3.7 column 5. Therefore, satisfy the standard.
- For PCD disabled car park:
 - The minimum point illuminance level calculated at the PCD disabled carpark is higher than 14 lux and higher than the average illuminance level calculated at the PC1 carpark spaces, which is required under AS1158.3.1 Table 3.7 column 3. Therefore, satisfy the standard.

5.0 SIGNAGE ILLUMINANCE LEVEL ASSESSMENT

The criteria for signage lighting are based on AS4282 - 2023, Table 3.2 (indicated in Figure 3) and Table 3.5 (Figure 13):

Table 3.4 — Maximum average luminance of surfaces (cd/m²)

Application conditions	Environmental zones				
	A0	A1	A2	A3	A4
See Clause 3.3.3	0.1	50	150	250	350

Figure 13 Table 3.5 of AS4282

We note that the signage contractor is unable to provide the photometric data for the advertising signs at this stage.

To comply with AS4282 requirements, the brand light box and signage shall be completed with a LED dimmable driver (Mean Well HLG -150H or similar approved), to ensure the *advertising signs does not give a veiling luminance to the driver of greater than exceeding 0.25 cd/m²* throughout the driver's approach to the advertising sign, and maintain a maximum average luminance of surface in accordance with table 3.4 during night time.

Signages shall also be dimmed on site to limit light spill across neighbouring property during pre-curfew hours and the curfew hour limited to Table 3.2 requirement, the upward light ratio of less than 0.5 and to ensure the threshold increment along Marryatt Street is limited to 20%.



Figure 14 Typical Mean Well HLG dimmable driver

Nighttime on site luminance measurements of the proposed signage shall be conducted during the commissioning of the site, to confirm that the signage dimmer setting is preset to meet the requirements stipulated above.

Figure 15 shows the elevations, which includes signage (TBC if illuminated)

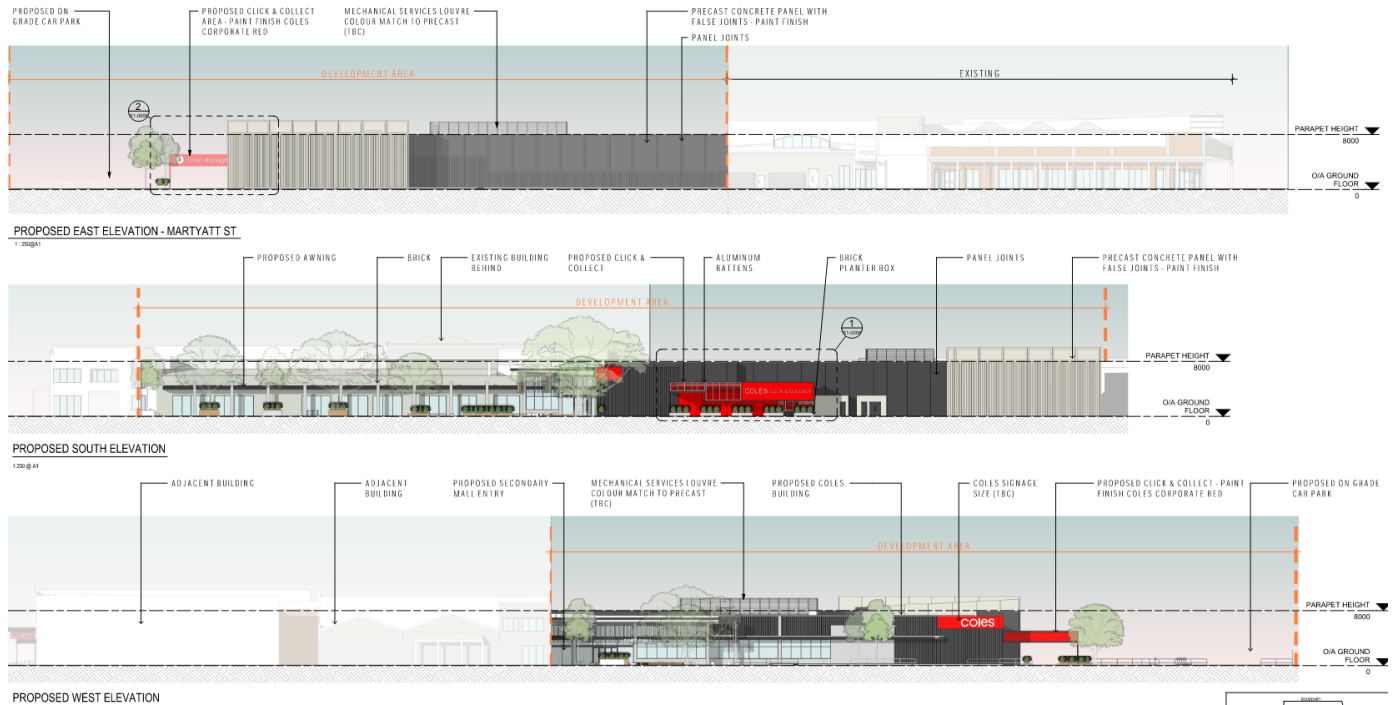


Figure 15: East, South, and West Elevations, drawing S1-0005 Rev B, dated 12.01.2026.

6.0 CONCLUSION

The modelled maximum spill on all boundaries for external lighting based on the above lighting layout and type complies with the criteria outlined in AS4282:2023.

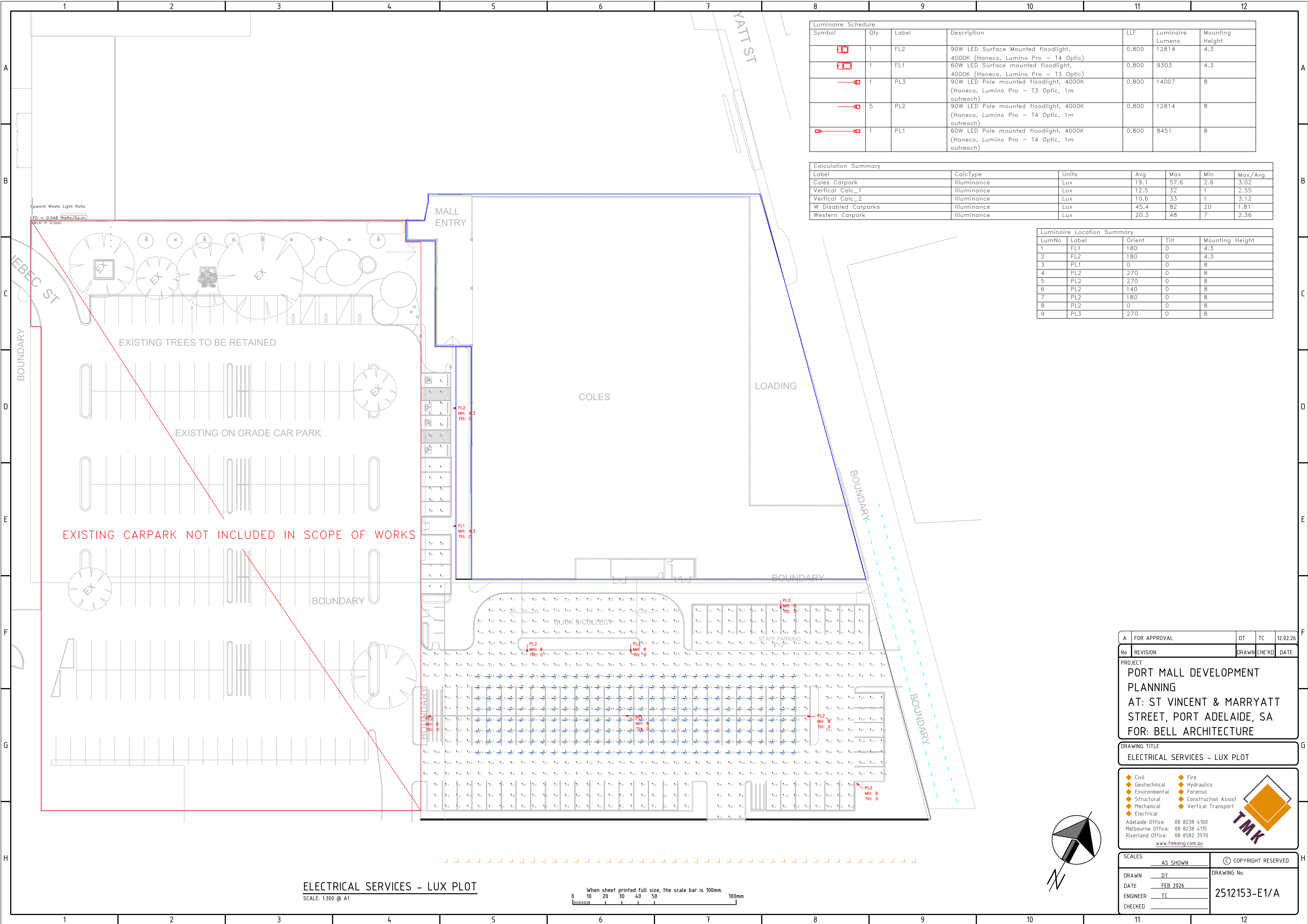
The modelled illumination level on ground plane on the proposed carpark and circulating space based on the above lighting layout and type complies with the criteria outlined in AS1158.3.1.

The illuminated signs must be installed with a dimmer switch, ensuring a maximum luminance level of 350cd/m^2 is achieved.

We trust the above is satisfactory. However, should there be any further clarifications/assistance please do not hesitate to contact the undersigned.

For and on behalf of
TMK Consulting Engineers

Daniel Tieu
Electrical Engineer



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8	PL2	0	0	8
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A	FOR APPROVAL	DT	TC	12.02.26
No	REVISION	DRAWN	CHEK'D	DATE

PROJECT
PORT MALL DEVELOPMENT
PLANNING
AT: ST VINCENT & MARRYATT
STREET, PORT ADELAIDE, SA
FOR: BELL ARCHITECTURE

DRAWING TITLE
ELECTRICAL SERVICES - LUX PLOT

- Civil
- Geotechnical
- Environmental
- Structural
- Mechanical
- Electrical

- Fire
- Hydraulics
- Forensic
- Construction Assist
- Vertical Transport

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